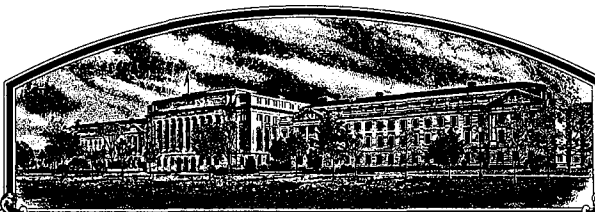


No.

9100097



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (AT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'PHR03'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 30th day of April in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

Kenneth H. Wan
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madigan
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Pioneer Hi-Bred International, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.	3. VARIETY NAME PHR03												
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) Plant Breeding Division Department of Corn Breeding P. O. Box 85 Johnston, Iowa 50131-0085		5. PHONE (Include area code) (515) 270-3300													
6. GENUS AND SPECIES NAME Zea mays		7. FAMILY NAME (Botanical) Gramineae													
8. CROP KIND NAME (Common Name) Corn		9. DATE OF DETERMINATION March 1988													
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">FOR OFFICIAL USE ONLY</td> </tr> <tr> <td colspan="2" style="text-align: center;">PVPO NUMBER</td> </tr> <tr> <td colspan="2" style="text-align: center; font-size: 1.2em;">9100097</td> </tr> <tr> <td style="width: 10%; text-align: center;">F I L I N G</td> <td style="padding: 2px;"> Date <u>Feb 7, 1991</u> Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. </td> </tr> <tr> <td style="text-align: center;">F E E S</td> <td style="padding: 2px;"> Filing and Examination Fee: \$ <u>2150.-</u> Date <u>Feb. 7, 1991</u> </td> </tr> <tr> <td style="text-align: center;">R E C E I V E D</td> <td style="padding: 2px;"> Certificate Fee: \$ <u>250.00</u> Date <u>March 30, 1992</u> </td> </tr> </table>		FOR OFFICIAL USE ONLY		PVPO NUMBER		9100097		F I L I N G	Date <u>Feb 7, 1991</u> Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.	F E E S	Filing and Examination Fee: \$ <u>2150.-</u> Date <u>Feb. 7, 1991</u>	R E C E I V E D	Certificate Fee: \$ <u>250.00</u> Date <u>March 30, 1992</u>
FOR OFFICIAL USE ONLY															
PVPO NUMBER															
9100097															
F I L I N G	Date <u>Feb 7, 1991</u> Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.														
F E E S	Filing and Examination Fee: \$ <u>2150.-</u> Date <u>Feb. 7, 1991</u>														
R E C E I V E D	Certificate Fee: \$ <u>250.00</u> Date <u>March 30, 1992</u>														
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Iowa		12. DATE OF INCORPORATION May 6, 1926													
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Bruce D. McBratney Plant Breeding Division Pioneer Hi-Bred International, Inc. P. O. Box 85 Johnston, Iowa 50131-0085															
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)															
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety. b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement. c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety. d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety. e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership. f. <input checked="" type="checkbox"/> Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office <u>2-1-91</u> g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."															
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> YES (If "YES," answer items 16 and 17 below) <input checked="" type="checkbox"/> NO (If "NO," skip to item 18 below)															
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED													
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> YES (If "YES," through <input type="checkbox"/> Plant Variety Protection Act <input type="checkbox"/> Patent Act. Give date. _____) <input checked="" type="checkbox"/> NO															
19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> YES (If "YES," give names of countries and dates) <input checked="" type="checkbox"/> NO															
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.															
SIGNATURE OF APPLICANT (Owner(s)) Pioneer Hi-Bred International, Inc.		CAPACITY OR TITLE _____													
SIGNATURE OF APPLICANT (Owner(s)) <u>Bruce D. McBratney</u>		CAPACITY OR TITLE Technical Support Coordinator													
DATE _____		DATE <u>1/31/91</u>													

14A. Exhibit A.
Origin and Breeding History

Pedigree: PHT19/PHG84)X131331X

Pioneer Line PHR03, Zea mays L., a yellow corn inbred, was developed by Pioneer Hi-Bred International, Inc. from the single cross PHT19 x PHG84 using the pedigree method of breeding. The progenitors of PHR03 are proprietary inbred lines of Pioneer Hi-Bred International, Inc. Selfing and selection were practiced within the above F1 cross for five generations in the development of PHR03 at Johnston, Iowa. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Johnston, Iowa, as well as other Pioneer research stations. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations made for uniformity.

JMS
3/31/92
PHR03 has shown uniformity and stability for all traits as described in Exhibit C - "Objective Description of Variety." It has been self-pollinated and ear-rowed ^{5 generations,} a sufficient number of generations with careful attention paid to uniformity of plant type to assure genetic homozygosity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observations for uniformity.

No variant traits have been observed or are expected in PHR03.

DEVELOPMENTAL HISTORY FOR PHR03

SEASON/YEAR	INBREEDING LEVEL
Summer 1982	F0 (Cross Made)
Winter 1983	F1
Summer 1983	F2
Winter 1984	F3
Summer 1984	F4
Summer 1985	F5
Summer 1986	F6*
Summer 1987	F7
Winter 1988	F8
Summer 1988	F9
Summer 1989	F10
Summer 1990	F11**

* PHR03 was selfed and selected through F6 generation.

** PHR03 was selfed and ear-rowed from F7 through F11 generations.

14B. Exhibit B. Novelty Statement

PHR03 is most similar to the Pioneer Hi-Bred International, Inc. Proprietary inbred line PHG84 (PVP Certificate No. 8600130). PHR03 silks approximately 100 (1590 versus 1690) growing degree units earlier than PHG84. PHR03 has darker (dark versus medium) green leaves, more (few versus none) marginal leaf waves and more (few versus absent) longitudinal leaf creases than PHG84. PHR03 has yellow anther color, PHG84 has purple anthers. PHR03 has pink silk whereas PHG84 has green silk. PHR03 has lighter (light versus dark) green fresh husk color than PHG84.

PHR03 has significantly higher yield and higher grain harvest moisture than PHG84. PHR03 has fewer barren plants, is taller, and has higher ear placement than PHG84. PHR03 has better seedling vigor and early stand count than PHG84. PHR03 has fewer dropped ears than PHG84.

9100097

VARIETY DESCRIPTION INFORMATION

INBRED = PHR03

Type: Dent

Region Best Adapted: Most Regions

A. Maturity: Average across maturity zones. Zone : 0

Heat Unit Shed: 1550

Heat Unit Silk: 1590

No. Reps: 76

$$\text{HEAT UNITS} = \frac{[\text{Max.Temp. } (<86^{\circ}\text{F.}) + \text{Min. Temp } (>50^{\circ}\text{F.})]*}{2} - 50$$

* If maximum is greater than 86 degrees fahrenheit, then 86 is used and if minimum is less than 50, then 50 is used. Heat units accumulated daily and can not be less than 0.

B. Plant Characteristics:

Plant height (to tassel tip): 246 cm

Length of top ear internode: 11 cm

Number of ears per stalk: Single

Ear height (to base of top ear): 85 cm

Number of tillers: None

Cytoplasm type: Normal

C. Leaf:

Color: Dark Green (B14)

Angle from Stalk: < 30 degrees

Marginal Waves: Few (WF9)

Number of Leaves (mature plants): 19

Sheath Pubescence: Light (W22)

Longitudinal Creases: Few (OH56A)

Length (Ear node leaf): 79 cm

Width (widest point, ear node leaf): 9 cm

5

9100097

D. Tassel:

Number lateral branches: 10
Branch Angle from central spike: 30-40 degrees
Pollen Shed: Heavy based on Pollen Yield Test
(139 % of experiment means)
Peduncle Length (top leaf to basal branches): 19 cm
Anther Color: Yellow
Glume Color: Green

E. Ear (Husked Ear Data Except When Stated Otherwise):

Length: 19 cm
Weight: 117 gm
Mid-point Diameter: 40 mm
Silk Color: Pink
Husk Extension (Harvest stage): Medium (Barely covering ear)
Husk Leaf: Short (< 8 cm)
Taper of Ear: Slight
Position of Shank (dry husks): Pendent
Kernel Rows: Straight, Distinct Number = 16
Husk Color (fresh): Light Green
Husk Color (dry): Buff
Shank Length: 15 cm
Shank (No. of internodes): 9

F. Kernel (Dried):

Size (from ear mid-point)
Length: 10 mm
Width: 8 mm
Thick: 5 mm
Shape Grade (% rounds): 40-60 (46 % medium round based on Parent
Test Data)
Pericarp Color: Colorless
Aleurone Color: Homozygous Yellow
Endosperm Color: Yellow
Endosperm Type: Normal Starch
Gm Wt/100 Seeds (unsized): 24 gm

G. Cob:

Diameter at mid-point: 25 mm
Strength: Strong
Color: Red

H. Diseases:

Corn Lethal Necrosis (MCMV=Maize Chlorotic Mottle Virus and
MDMV=Maize Dwarf Mosaic Virus): Intermediate
Maize Dwarf Mosaic Complex (MDMV & MCDV=Maize Dwarf
Virus): Susceptible
Anthracnose Stalk Rot (C. graminicola): Intermediate
S. Leaf Blight (B. maydis): Intermediate
N. Leaf Blight (E. turcicum): Intermediate
Common Rust (P. sorghi): Resistant
Southern Rust (P. polysora): Intermediate
Gray Leaf Spot (C. zeae): Intermediate
Stewart's Wilt (E. stewartii): Resistant
Goss's Wilt (C. nebraskense): Highly Resistant
Fusarium Ear Mold (F. moniliforme): Resistant

I. Insects:

European Corn Borer-1 Leaf Damage (Pre-flowering): Intermediate
European Corn Borer-2 (Post-flowering): Intermediate

The above descriptions are based on a scale of 1-9, 1 being
highly susceptible, 9 being highly resistant.

S (Susceptible): Would generally represent a score of 1-3.
I (Intermediate): Would generally represent a score of 4-5.
R (Resistant): Would generally represent a score of 6-7.
H (Highly Resistant): Would generally represent a score of
8-9. Highly resistant does not imply
the inbred is immune.

J. Variety Most Closely Resembling:

Character	Inbred
Maturity	PHG84
Usage	PHG84

PHG84 (PVP Certificate No. 8300130) is a Pioneer Hi-Bred
International, Inc. proprietary inbred.

Data for Items B, C, D, E, F, and G is based primarily on a maximum of
six reps from Johnston, Iowa grown in 1988 and 1990, plus description
information from the maintaining station.

CLARIFICATION OF DATA IN EXHIBITS C AND D

Please note the data presented in Exhibit C, "Objective Description of Variety," is data collected primarily at Johnston, Iowa, plus description information from the maintaining station. The data in Exhibit D, "Additional Description of Variety," is data from comparisons of inbreds or hybrids grown in the same tests in the adapted growing area of PHR03.

DEFINITIONS

In the description and examples, a number of terms are used herein. In order to provide a clear and consistent understanding of the specification and claims, including the scope to be given such terms, the following definitions are provided:

BAR PLT = BARREN PLANTS. This is the percent of plants per plot that were not barren (lack ears).

BRT STK = BRITTLE STALKS. This is a measure of the stalk breakage near the time of pollination, and is an indication of whether a hybrid or inbred would snap or break near the time of flowering under severe winds. Data are presented as percentage of plants that did not snap.

BU ACR = YIELD (BUSHELS/ACRE). Actual yield of the grain at harvest adjusted to 15.5% moisture. ABS is in absolute terms and % MN is percent of the mean for the experiments in which the hybrid or inbred was grown.

DRP EAR = DROPPED EARS. This is a measure of the number of dropped ears per plot and represents the percentage of plants that did not drop ears prior to harvest.

EAR HT = EAR HEIGHT. The ear height is a measure from the ground to the top developed ear node attachment and is measured in centimeters.

EST CNT = EARLY STAND COUNT. This is a measure of the stand establishment in the spring and represents the number of plants that emerge on a per plot basis for the hybrid or inbred.

GDU SHD = GDU TO SHED. The number of growing degree units (GDUs) or heat units required for an inbred line or hybrid to have approximately 50 percent of the plants shedding pollen and is measured from the time of planting. Growing degree units are calculated by the Barger Method, where the heat units for a 24-hour period are:

$$\text{GDU} = \frac{(\text{Max. temp.} + \text{Min. temp.})}{2} - 50$$

The highest maximum temperature used is 86°F and the lowest minimum temperature used is 50°F. For each inbred or hybrid it takes a certain number of GDUs to reach various stages of plant development.

GDU SLK = GDU TO SILK. The number of growing degree units required for an inbred line or hybrid to have approximately 50 percent of the plants with silk emergence from time of planting. Growing degree units are calculated by the Barger Method as given in GDU SHD definition.

GRN APP. = GRAIN APPEARANCE. This is a 1 to 9 rating for the general quality of the shelled grain as it is harvested based on such factors as the color of the harvested grain, any mold on the grain, and any cracked grain. High scores indicate good grain quality and low scores indicate poor grain quality.

MST = HARVEST MOISTURE. The moisture is the actual percentage moisture of the grain at harvest.

PLT HT = PLANT HEIGHT. This is a measure of the height of the plant from the ground to the tip of the tassel in centimeters.

RT LDG = ROOT LODGING. Root lodging is the percentage of plants that do not root lodge; plants that lean from the vertical axis at an approximately 30° angle or greater would be counted as root lodged.

SDG VGR = SEEDLING VIGOR. This is the visual rating (1 to 9) of the amount of vegetative growth after emergence at the seedling stage (approximately five leaves). A higher score indicates better vigor and a low score indicates poorer vigor.

STA GRN = STAY GREEN. Stay green is the measure of plant health near the time of black layer formation (physiological maturity). A high score indicates better late-season plant health.

STK LDG = STALK LODGING. This is the percentage of plants that did not stalk lodge (stalk breakage) as measured by either natural lodging or pushing the stalks and determining the percentage of plants that break below the ear.

TST WT = TEST WEIGHT UNADJUSTED. The measure of weight of the grain in pounds for a given volume (bushel).

14D. EXHIBIT D. ADDITIONAL DESCRIPTION OF PHR03.
INBRED PER SE YIELD TEST COMPARISON OF PHR03 AND PEG84 EVALUATED OVER FOUR YEARS.

VARIETY #1 - PHR03
VARIETY #2 - PHG84

* = 10% SIG + = 5% SIG # = 1% SIG																			
YEAR	VAR	BU	ACR	BU	MST	BAR	PLT	EAR	SDG	EST	DRP	GDV	SHD	GRN	STA	STK	RT		
	#	ABS	%MN	ABS	ABS	PLT	HT	HT	ABS	ABS	ABS	ABS	ABS	APP	GRN	LDG	ABS		
87	1			100.0					6.3	44.6		1567	1621		7.0				
	2			91.7					3.0	41.9		1604	1671		6.5				
	LOCS			1					3	5		6			2				
	PROB								.010+	.142		.020+	.097*		.500				
88	1			95.5		236		73	5.0	34.8		1635	1684		5.3				
	2			95.5		228		76	1.8	30.9		1675	1718		5.3				
	LOCS			2		1		1	6	13		16	13		3				
	PROB			1.00					.006#	.027+		.017+	.131		.000#				
89	1									22.8		1535	1575						
	2									21.8		1575	1610						
	LOCS									4		1	1						
	PROB									.479									
90	1	72.8	149	22.5	94.9	245		85	4.0	40.0	100.0	1588	1627	6.3	6.3	82.6	100.0		
	2	10.2	22	20.6	24.4	210		69	1.0	33.8	94.3	1769	1815	4.7	6.8	85.8	100.0		
	LOCS		3	3	3	3		3	3	11	3	7	7	3	3	3	3		
	PROB		.029+.002#	.500	.002#	.102		.268	.035+	.004#	.387	.000#	.000#	.214	.380	.813	1.00		
TOTAL SUM	1	72.8	149	22.5	95.9	243		82	5.1	36.6	100.0	1607	1651	6.3	6.1	82.6	100.0		
	2	10.2	22	20.6	59.3	215		70	1.9	32.4	94.3	1680	1728	4.7	6.2	85.8	100.0		
	LOCS		3	3	6	4		4	12	33	3	30	27	3	8	3	3		
	DIFF		62.6	128	1.9	36.6	28		8	3.2	4.1	5.7	73	77	1.7	0.0	3.2	0.0	
PROB		.029+.002#	.500	.061*	.083*			.285	.000#	.000#	.387	.000#	.000#	.214	.916	.813	1.00		

14E. EXHIBIT E.
Statement of the Basis of Applicant's Ownership

Pioneer Hi-Bred International, Inc., Des Moines, Iowa, is the employer of the plant breeders involved in the development and evaluation of PHR03. Pioneer Hi-Bred International, Inc. has the sole rights and ownership of PHR03.